Nortel Business Communications Manager 450

Maintenance

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Contents

New in this release 5
Features 5

Introduction 7

System maintenance 9

Equipment replacement 11

BCM450 internal component replacement 13
Replacing a media bay module 15
Prerequisites 15
Procedure steps 15
Removing the power supply 16
Connecting the new power supply 17
Removing the hard disk 17
Installing the hard disk 18
Installing the CEC 19
Replacing memory 20
Prerequisites 21
Removing the cooling fan 21
Installing the fan 22
Replacing the clock/calendar battery 23
Prerequisites 23
Procedure steps 24

Redundant power supply installation 25
Prerequisites for redundant power supply installation 25
Redundant power supply installation navigation 26
Removing the PSU status connector jumper 26
Procedure steps 27
Installing the redundant power supply cage 28
Procedure steps 28
Installing the secondary cooling fan 31
Procedure steps 32
Installing the power supply modules 33

Nortel Business Communications Manager 450 1.0
Maintenance
NN40160-503 01.02 Standard
May 2009

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Procedure steps 34

Common procedures 35

Disconnecting the cables from the main unit 35
Disconnecting the cables from the expansion cabinet 36
Shutting down the system for maintenance 36
Returning the system to operation 38
Removing the base function tray 39
Prerequisites 39
Procedure steps 39
Reinstalling the base function tray 40
Prerequisites 40
Procedure steps 40
Removing the main unit top cover 41
Prerequisites 41
Procedure steps 41
Installing the main unit top cover 42
Prerequisites 42
Procedure steps 42

BCM450 modules management 45

Configuring or deconfiguring a Station Module type MBM 46
Configuring or deconfiguring a Trunk Module or Combination MBM 47
Disabling or enabling a bus or module 48
Disabling or enabling a port channel setting 48

System LEDs reference 51

System status monitor LEDs 51
Hard disk drive LEDs 52

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New in this release

The following sections detail what's new in *Nortel Business Communications Manager 450—Maintenance* (NN40160-503) in Release 1.0:

- "Features (page 5)"

Features

- Easy to understand system status LEDs. For more information see System LEDs reference (page 51)
- A slide-out tray for the hard disk, for easy replacement. For more information, see Removing the hard disk (page 17) and Installing the hard disk (page 18).
- A removable base function tree (BFT), containing the base mother board (BMB) to simplify maintenance.

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Introduction

This document describes how to maintain the Business Communications Manager 450 Release 1.0 (BCM450 1.0) systems.

Navigation

- System maintenance (page 9)
- Equipment replacement (page 11)
- BCM450 internal component replacement (page 13)
- Redundant power supply installation (page 25)
- BCM450 modules management (page 45)
- Common procedures (page 35)
- System LEDs reference (page 51)

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System maintenance

To maintain your Business Communications Manager 450 (BCM450) system, you can replace damaged equipment, manage installed modules, and use BCM450 utilities to monitor performance and track statistics.

Prerequisites to system maintenance

- Ensure your BCM450 system is properly installed. For more information about installing a BCM450 system, see *Business Communications Manager 450 Installation — Hardware* (NN40160-301).

System maintenance tasks

This work flow shows you the sequence of tasks you perform to maintain your BCM450 system. To link to any tasks, click on System maintenance navigation (page 10).

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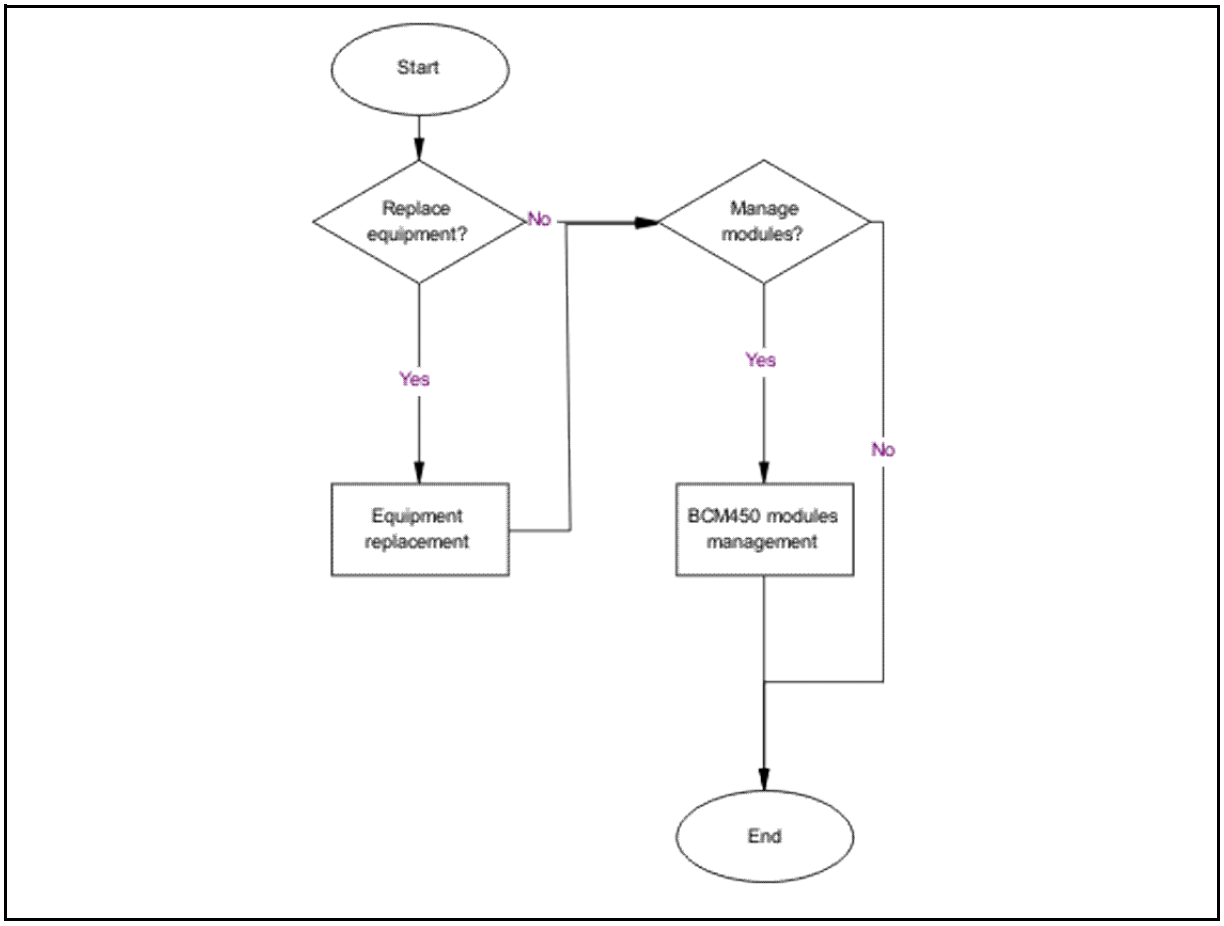
Figure 1 System maintenance tasks



System maintenance navigation

- Equipment replacement (page 11)
- BCM450 modules management (page 45)

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Equipment replacement

Replace BCM450 equipment and components when they are damaged.

WARNING

Risk of leakage currents

You must disconnect the telephony and data networking cables from the system before disconnecting the power cord from a grounded outlet.

Equipment replacement tasks

This work flow shows you the sequence of tasks you perform to replace equipment for your BCM450 system. To link to any tasks, click on Equipment replacement navigation (page 12).

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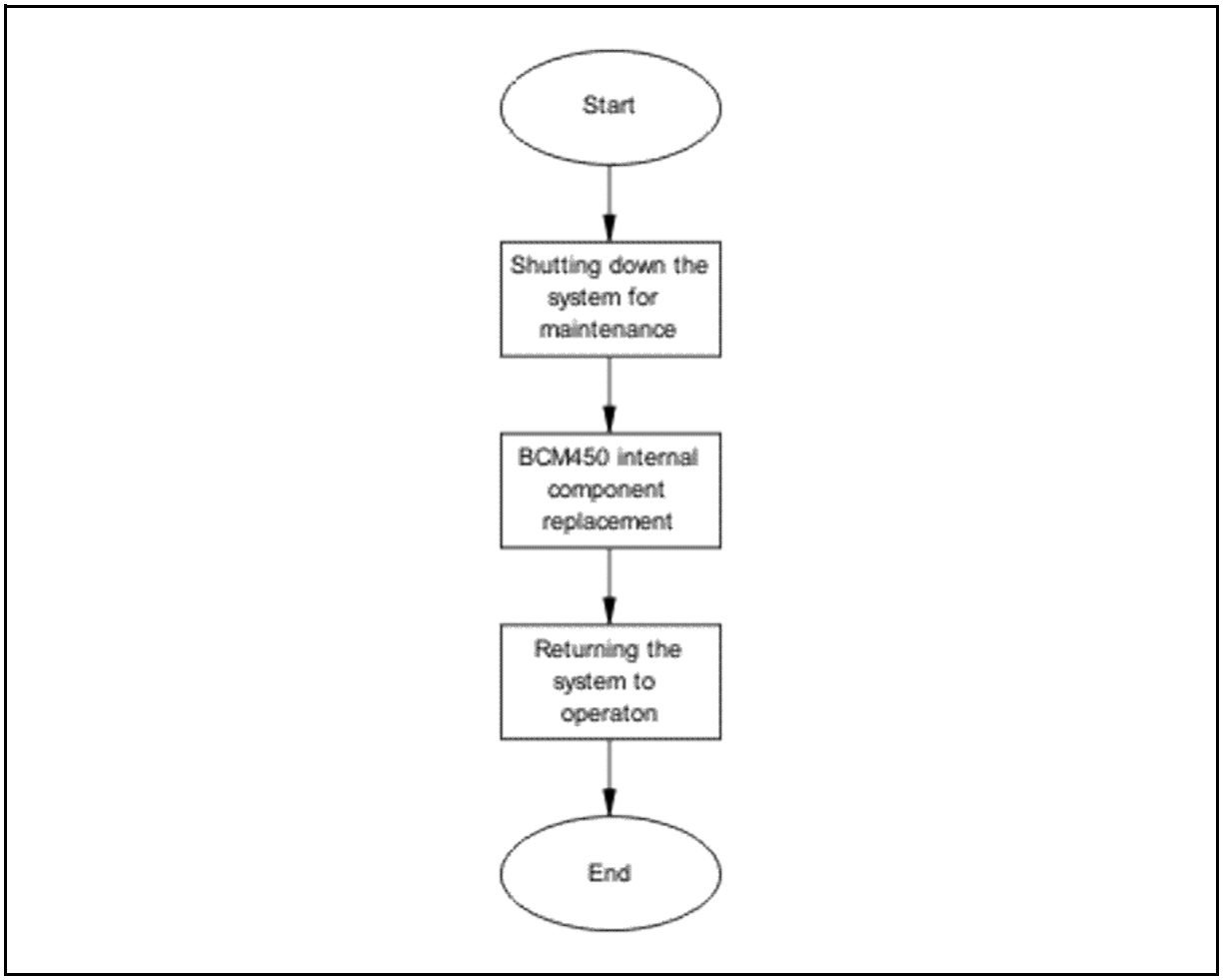
Figure 2 Equipment replacement tasks



Equipment replacement navigation

- BCM450 internal component replacement (page 13)

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BCM450 internal component replacement

You can replace components in the main unit if they are defective or damaged.

Prerequisites to BCM450 internal component replacement

- Ensure the BCM450 system is shut down. For more information, see Shutting down the system for maintenance (page 36).
- Disconnect the main unit from the power outlet.
- Remove the BCM450 main unit from the rack, wall, or desktop and set it on a flat, clean, static-free surface.
- Ensure you have the following tools:
  - Phillips screwdriver #2, with a 3.5-inch blade
  - 3/16-inch slot screwdriver
  - Antistatic wrist grounding strap

CAUTION

Risk of damage to equipment

You must wear an antistatic grounding strap at all times when handling electronic components. Failure to do so can result in damage to the equipment.

CAUTION

Risk of information loss and damage to equipment

Do not use an electric or magnetized screwdriver near the hard disk. You can lose the information stored on the disk. Shock can damage the hard disk. Do not drop or hit the hard disk.

BCM450 internal component replacement procedures

This task flow shows you the sequence of procedures you perform to replace an internal component in a BCM450 main unit. To link to any procedure, click on BCM450 internal component replacement navigation (page 14).

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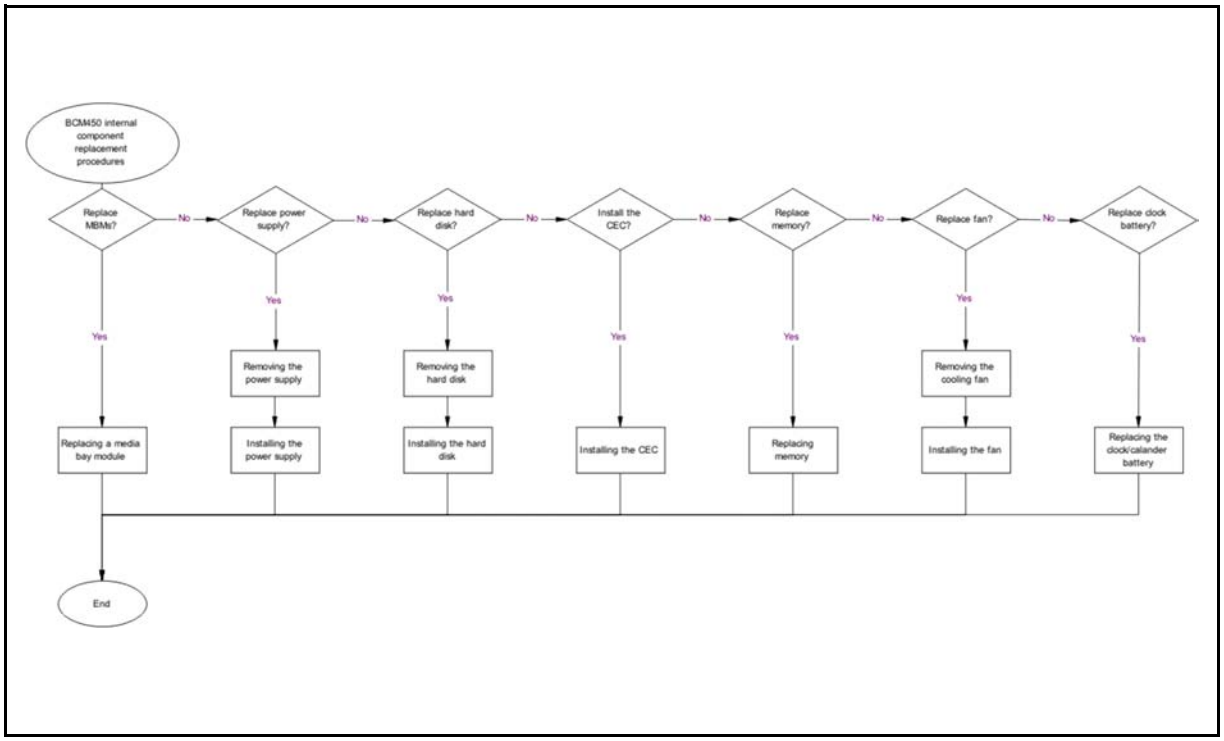
Figure 3 BCM450 internal component replacement procedures



BCM450 internal component replacement navigation

- Replacing a media bay module (page 15)
- Removing the power supply (page 16)
- Connecting the new power supply (page 17)
- Removing the hard disk (page 17)
- Installing the hard disk (page 18)
- Installing the CEC (page 19)
- Replacing memory (page 20)
- Removing the cooling fan (page 21)
- Installing the fan (page 22)
- Replacing the clock/calendar battery (page 23)

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Replacing a media bay module

This section describes how to replace a media bay module (MBM) installed in your BCM450 main unit or expansion cabinet if it is defective or damaged.

This section describes replacing an MBM with the same type of MBM. If you want to replace an MBM with a different type of MBM, you must treat it as a new installation. Ensure the new MBM does not overrun any lines already assigned to other MBMs.

Prerequisites

- Power down the BCM450 system. For more information, see "Shutting down the system for maintenance (page 36)".
- Ensure the BCM450 main unit is disconnected from the AC power source.

Procedure steps

Step	Action
1	Remove any cabling from the MBM faceplate.
2	Grasp the right edge of the MBM ejector lever with your thumb, index and middle fingers.
3	Pull outward to partially eject the MBM. Pull further on the lever to eject the MBM from the bay.
4	Grasp the top and bottom edges of the MBM, and remove it from the BCM unit. Place the MBM in a clean, safe, and static-free area.
5	Set the DIP switches on the new MBM to match the settings of the old MBM.
6	Install the new MBM in the main unit or expansion cabinet. For more information on installing an MBM, see *Nortel Business Communications Manager 450 1.0 Installation — System* (NN40160-301).
7	Return the BCM450 system to normal operation.

--End--

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Removing the power supply

Remove the defective power supply from your BCM450 main unit or BCM450 expansion cabinet before installing the new power supply.

WARNING

Risk of leakage currents

You must disconnect the telephony and data networking cables from the system before disconnecting the power cord from a grounded outlet.

CAUTION

Risk of equipment damage

Protect the hardware components against damage from electrostatic discharge. Always wear a grounded wrist strap before you handle components. Always place the components in a static-free container.

Procedure steps

Step	Action
1	Shut down the BCM450 system. For more information, see Shutting down the system for maintenance (page 36).
2	Disconnect all cables from the front of the base function tray.
3	Disconnect the main unit and the expansion cabinet (if applicable) from the AC power connection.
4	Attach one end of the grounding strap to your wrist and the other end to a grounded metal surface.
5	Loosen the screws securing the power supply module (located at the back of the unit, on the right).
6	Pull handle located on the power supply module outward to remove the power supply module from the unit.

--End--

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Connecting the new power supply

After you remove the defective power supply, connect the new power supply to your BCM450 main unit or BCM450 expansion cabinets.

Attention: Ensure that the power switch on the power supply is kept in the ON position. Do not turn the switch off when powering down the BCM system.

Prerequisites

- Ensure that the new power supply is an auto adjust power supply.

Procedure steps

Step	Action
1	Firmly slide the power supply module directly into the power supply bay.
2	Tighten the screws to secure the power supply module.

--End--

Removing the hard disk

Remove the damaged hard disk before installing the new hard disk.

Prerequisites

- Power down the BCM450 system. For more information, see “Shutting down the system for maintenance (page 36)”.
- Ensure the BCM450 main unit is disconnected from the AC power source.

CAUTION
Risk of damage to equipment
Do not use an electric or magnetized screwdriver near the hard disk. You can lose the information stored on the disk. Shock can damage the hard disk. Do not drop or hit the hard disk.

Procedure steps

Step	Action
1	Attach one end of a grounding strap to your wrist and the other end to a grounded metal surface.

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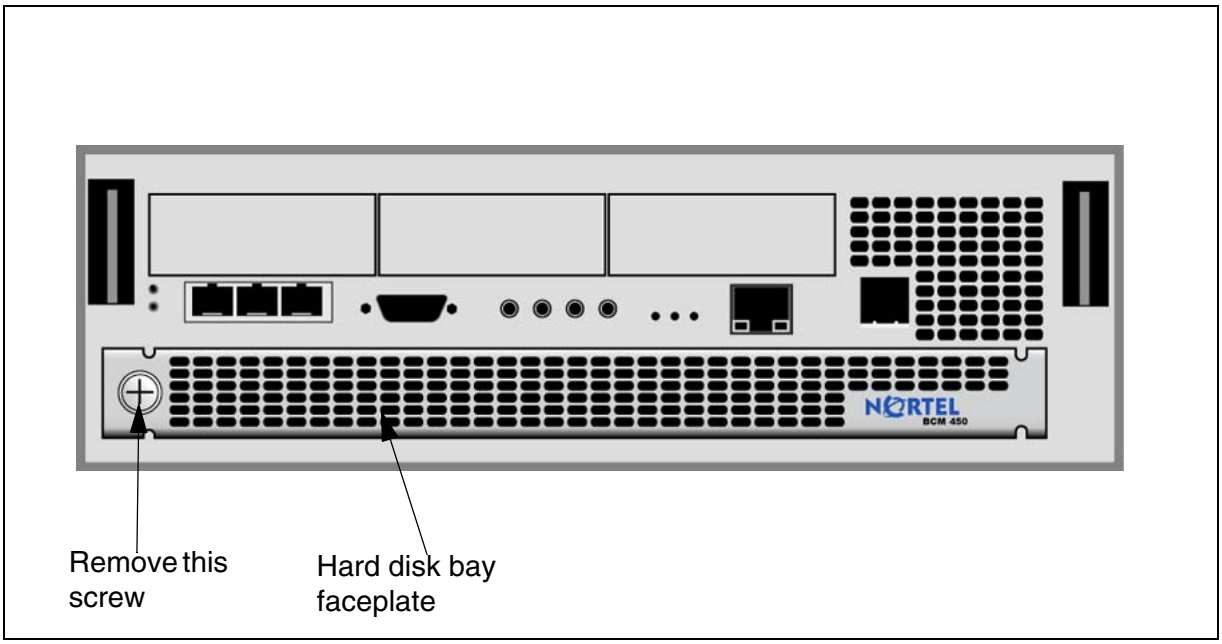
2 On the bottom left of the base function tray, loosen the thumb screw and remove the hard disk bay faceplate.

3 Using your thumb and forefinger, pull hard disk bracket forward, out of the main unit.

Figure 4 Hard disk bay faceplate



4 Lift the hard disk and hard disk bracket from the main unit, and place them on a flat, clean, static-free surface.

5 Remove the four screws that secure the hard disk to the hard disk bracket.

6 Lift the hard disk from the hard disk bracket, and set it on a flat, clean, static-free surface.

--End--

Installing the hard disk

Install the new hard disk into the BCM450 main unit.

Prerequisites

- Remove the hard disk. For more information about removing the hard disk, see “Removing the hard disk (page 17).”

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CAUTION
Risk of equipment damage
Use only the screws that you removed from the hard disk. Using other screws can damage the hard disk.

Procedure steps

Step	Action
1	Attach one end of a grounding strap to your wrist and the other end to a grounded metal surface.
2	Place the new hard disk in the hard disk bracket.
3	Use the four hard disk bracket screws to secure the hard disk to the bracket.
4	Push the hard disk and bracket forward into the hard disk bay (the left most slot).
5	Press down lightly on the top of the hard disk to ensure that the hard disk bracket is seated properly.
6	Replace the hard disk bay panel, and tighten the thumb screw.
7	Perform a restore or manually reprogram the system.

--End--

Installing the CEC

You can install the optional compact expansion card (CEC) to increase the capacity of the BCM450 system.

Prerequisites

- Power down the BCM450 system. For more information, see “Shutting down the system for maintenance (page 36)”.
- Ensure the BCM450 main unit is disconnected from the AC power source.

CAUTION
Risk of damage to equipment
You must wear an antistatic grounding strap at all times when handling electronic components. Failure to do so can result in damage to the equipment.

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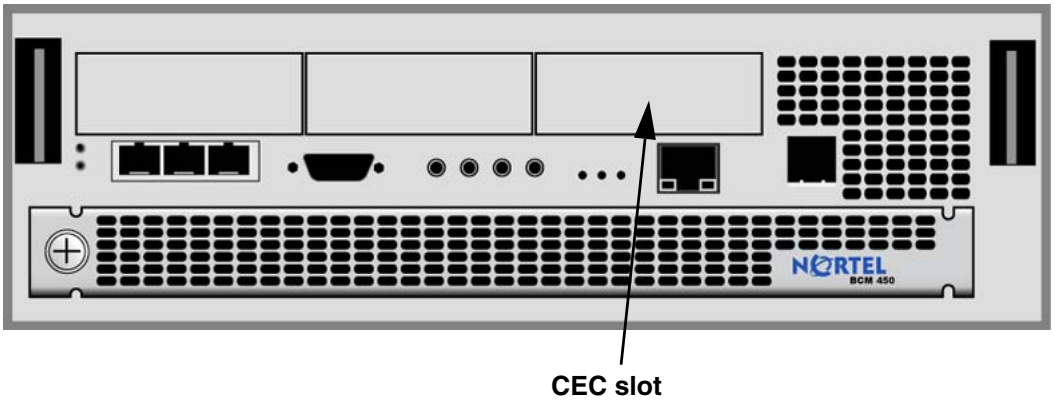
Procedure steps

Step	Action
1	Power down the BCM 450 system and remove the base function tray.
2	Attach one end of a grounding strap to your wrist and the other end to a grounded metal surface.
3	Remove the plastic cap on the CEC slot on the front of the base function tray.

Figure 5 CEC slot



4	Screw the four metal standoffs (included) into the main board of the base function tray.
5	Slide the CEC into position from the back of the base function tray, so that the CEC protrudes slightly from the front faceplate of the base function tray.
6	Align the connectors on the card and on the main board of the base function tray and push down. Ensure that the card is connected securely to the main board.
7	Use the four supplied screws to fasten the card to the standoffs.
8	Reinstall the base function tray and power on the BCM450 system.

--End--

Replacing memory

Use the following procedure to replace the random access memory card in the BCM450 main unit if it is defective or damaged.

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Prerequisites

- Ensure that you have available a replacement DDR RAM card (up to 1gigabyte, 533 megahertz).

Procedure steps

Step	Action
1	Shut down the system. For more information, see Shutting down the system for maintenance (page 36).
2	Disconnect the BCM450 system from the AC power outlet.
3	Disconnect any connectors from the front of the base function tray.
4	Attach one end of the grounding strap to your wrist and the other end to a grounded metal surface.
5	Remove the base function tray. For more information see Removing the base function tray (page 39).
6	Carefully push down on the fastening tabs on either side of the DIMM. As you press down on the fastening tabs, the DIMM lifts out of the DIMM slot.
7	Grasp both ends of the DIMM with your fingertips. Lift the DIMM up and away from the DIMM slot. Place the DIMM in a static-free container.
8	Position and correctly align the new DIMM (edge connectors first) into the connector.
9	Carefully and firmly press down on the top of the DIMM card with your thumbs. At the same time, use your index fingers to move the fastening tabs inward toward the card. When the card is completely inserted in the connector, the fastening tabs clip to the side of the DIMM card.
10	Reinstall the base function tray. For more information, see Reinstalling the base function tray (page 40).
11	Insert all connectors in the correct locations on the base function tray face.
12	Restore the BCM system to operation.

--End--

Removing the cooling fan

Remove the existing cooling fan before you install a new cooling fan in the BCM450 main unit.

Prerequisites

- Power down the BCM450 system. For more information, see Shutting down the system for maintenance (page 36).

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- Ensure the BCM450 main unit is disconnected from the AC power source.

Procedure steps

Step	Action
1	Attach one end of a grounding strap to your wrist and the other end to a grounded metal surface.
2	Locate the fan access panel at the rear of the main unit.
3	Remove the fan access panel screws at the top of the panel. Place the screws in a safe location.
4	Tip the top of the fan access panel toward you.
5	Grasp the fan access panel with both hands and lift the away from the main unit. Do not stretch the fan cables.
6	Disconnect the fan cable connector from the Chassis Interface Card (CIF).
7	Remove the four snap rivets that hold the fan to the fan access panel. The snap rivet has two parts: a center pin and a collar.
8	With your fingernails, gently separate the plastic rivet pin from the center of the rivet collar.
9	Remove the rivet center pin and collar from the fan access panel and place them in a safe location.
10	Lift the fan away from the fan access panel and place it in a safe location.

--End--

Installing the fan

After removing the defective or damaged fan, install the new fan into the BCM450 main unit.

Prerequisites

- Remove the existing fan. For more information about removing the fan, see “Removing the cooling fan (page 21).”

Procedure steps

Step	Action
1	Attach one end of a grounding strap to your wrist and the other end to a grounded metal surface.
2	Place the new fan in the fan access panel in the same position as the old fan.
3	Ensure the fan cable is oriented to the bottom of the fan and that the fan label is closest to the grill on the panel.

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Attention: Ensure the label of the new fan faces the back of the BCM450 unit. Air must flow out of the unit as indicated by the embossed arrows on the fan.

4 Align the fan chassis mounting holes with the holes in the fan access panel.

5 Hold the fan in place against the fan access panel and push the rivet collar through the fan access panel and fan chassis mounting holes.

6 Insert the rivet pin into the rivet collar.

7 Connect the fan cable connector to the Fan 1 connector (if replacing the primary fan) or to the Fan 2 connector (if replacing a secondary fan) on the Chassis Interface Card (CIF).

8 Mount the fan access panel to the main unit.

9 Tip the top of the fan access panel toward you.

10 Insert the bottom lip of the fan access panel in the main unit.

11 Align the screw holes in the fan access panel with the screw holes on the main unit.

12 Install and tighten the fan access panel screws.

13 Restore the BCM450 system to operation.

14 To test the direction of the fan exhaust, hold a piece of paper or your hand close to the fan exhaust. A correctly installed fan blows air away from the main unit.

15 If the fan exhaust air flow is incorrect, remove the cooling fan and reinstall it in the correct position.

--End--

Replacing the clock/calendar battery

This section describes how to remove and install the clock/calendar battery located on the main card when it ceases to function. The clock/calendar battery supplies the power required to keep the CMOS information current if there is a power failure.

Attention: You must replace the battery with a CR2032, 3 Volt Maxell coin cell battery. The use of any other manufacturer can invalidate the safety approval of the BCM450 main unit and possibly cause a fire or explosion.

Prerequisites

- Shut down the BCM450 system. For more information, see “Shutting down the system for maintenance (page 36)”.
- Remove the base function tray. For more information, see “Removing the base function tray (page 39)”.

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Procedure steps

Step	Action
1	Locate the clock battery on the main board of the base function tray.
2	Use your finger to carefully lift the battery out of the socket. Do not use any type of tool to remove the battery.
3	Position the new battery on top of the battery socket. Ensure you have the positive side of the battery facing up.
4	Push down until the battery snaps into the socket.
5	Reinstall the base function tray.
6	Restore the BCM system to operation.

--End--

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Redundant power supply installation

This chapter describes how to install the optional redundant power supply and cooling fan into the BCM450 main unit.

Each power supply has its own AC power connector, an Audible Fail Alarm shutoff button, and a power switch.

Attention: Both power switches must be turned on at all times. When shutting down the BCM system, disconnect the power cords from the AC power source; do not turn the power switches off.

Prerequisites for redundant power supply installation

- You require a redundant power supply module (NTAB3419E5)
- You require a redundant power supply upgrade kit (NTAB3420E5)

Redundant power supply installation tasks

This task flow shows you the sequence of tasks you perform to install a redundant power supply and cooling fan in your BCM450 system. To link to any tasks, select Figure 6Redundant power supply installation tasks (page 26).

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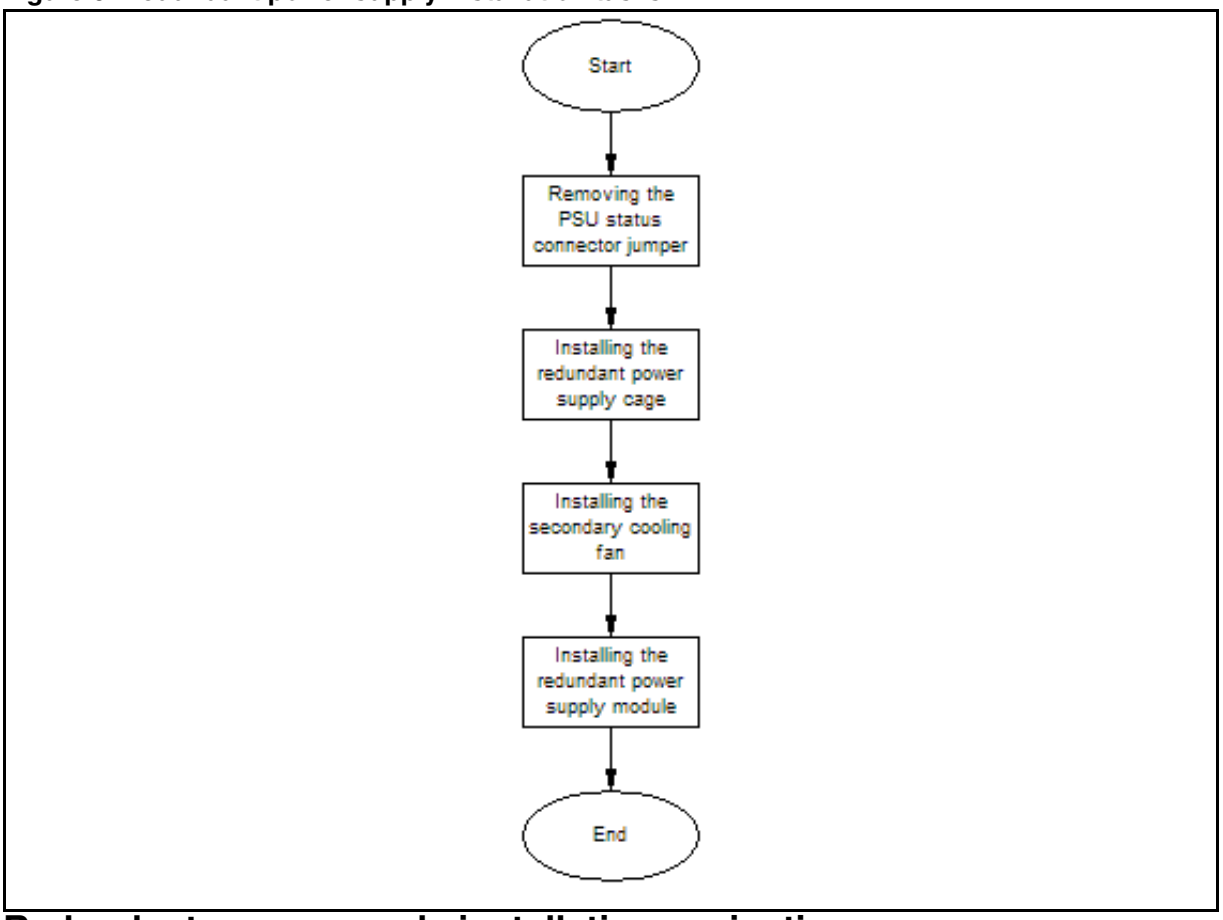
Figure 6 Redundant power supply installation tasks


Start
Removing the PSU status connector jumper
Installing the redundant power supply cage
Installing the secondary cooling fan
Installing the redundant power supply module
End

Redundant power supply installation navigation

- Removing the PSU status connector jumper (page 26)
- Installing the redundant power supply cage (page 28)
- Installing the secondary cooling fan (page 31)
- Installing the power supply modules (page 33)

Removing the PSU status connector jumper

Perform the following procedure to remove the power supply unit (PSU) status connector jumper if you are installing a redundant power supply in the BCM450 main unit for the first time.

Prerequisites

- Turn off the BCM450 system.
- You require a Phillips head screwdriver.
- Ensure you disconnect the BCM450 main unit from the AC power source.

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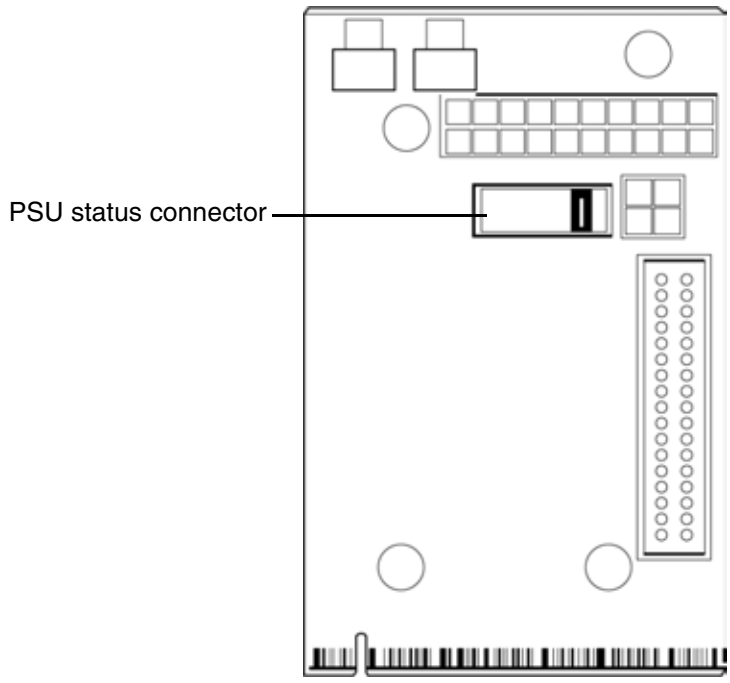
CAUTION
Risk of damage to equipment
You must wear an antistatic grounding strap at all times when handling electronic components. Failure to do so can result in damage to the equipment.

Procedure steps

Step	Action
1	Turn off the BCM450 system.
2	Disconnect the BCM450 system from the AC power outlet.
3	Attach one end of a grounding strap to your wrist and the other end to a grounded metal surface.
4	Remove the main unit top cover.
5	Locate the PSU status connector on the Chassis Interface (CIF) card.



6	Remove the RPS output signaling connector jumper (this is the only jumper on the board). Use needle-nose pliers to pull the jumper out and away from the connector.
7	Connect the PA cable to the PSU Status connector.

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--End--

Installing the redundant power supply cage

Perform the following procedure to install the redundant power supply cage in the main unit.

Prerequisites

- Power down the BCM450 system.
- You require a Phillips head screwdriver.
- Ensure you disconnect the BCM450 main unit from the AC power source.
- Remove the standard power supply from the main unit. For more information, see Removing the power supply (page 16)

CAUTION
Risk of damage to equipment
You must wear an antistatic grounding strap at all times when handling electronic components. Failure to do so can result in damage to the equipment.

Procedure steps

Step	Action
1	Power down the BCM450 system.
2	Disconnect the BCM450 system from the AC power outlet.
3	Attach one end of a grounding strap to your wrist and the other end to a grounded metal surface.
4	Remove the standard power supply from the BCM450 main unit.
5	Remove the power supply support bracket from the main unit by removing the interior and exterior mounting screws. Place the screws in a safe location.

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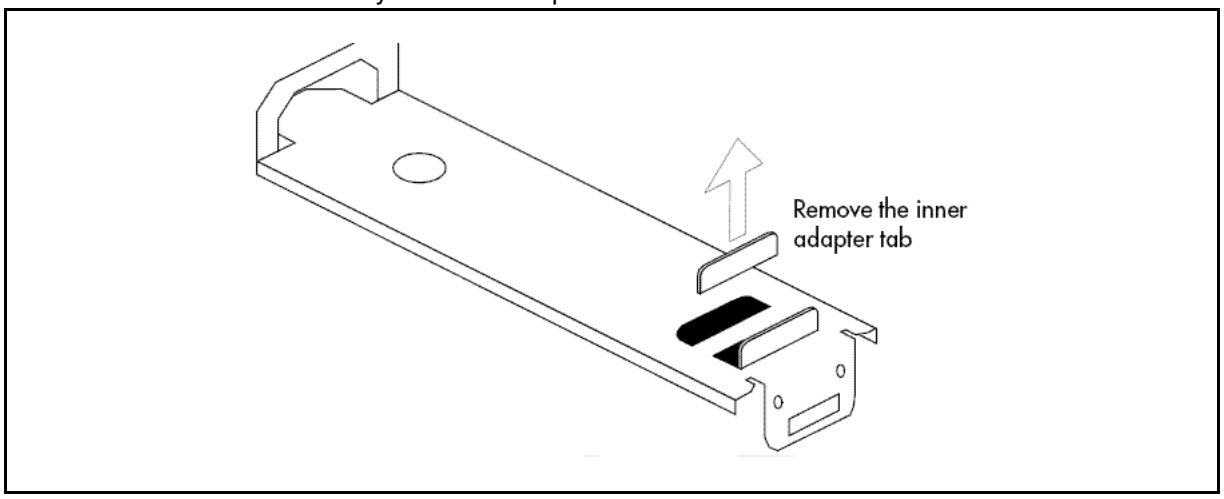
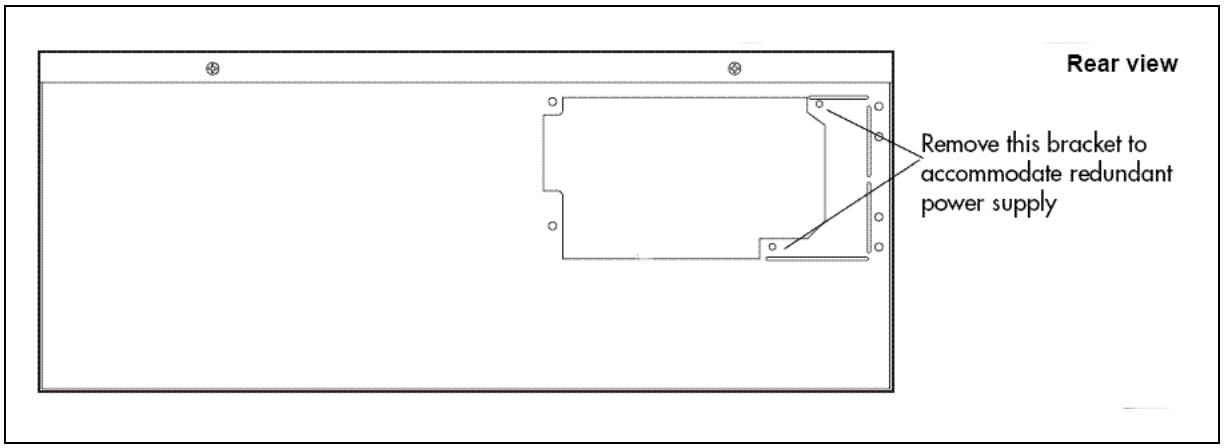
6 Remove the power supply adapter tab from the support bracket. Use pliers to bend and snap the tab away from the support bracket. Ensure you remove only the inner adapter tab.



7 Remove the knockout bracket from the rear of the main unit.



8 Remove both power supply modules from the redundant power supply cage before you install the power supply in the main unit.

9 Place the redundant power supply (top down) on a flat surface. Place the power supply support bracket on the bottom surface of the power supply.

10 Insert a tie-wrap in the power supply support bracket lanclet.

11 Gather together and route the motherboard 20-pin power cable (P1), the +12 V power cable (P9), the 3.3 V load cable (PB), and the PS monitor cable (PA) to the tie-wrap.

12 Secure the cables to the power supply support bracket with the tie-wrap

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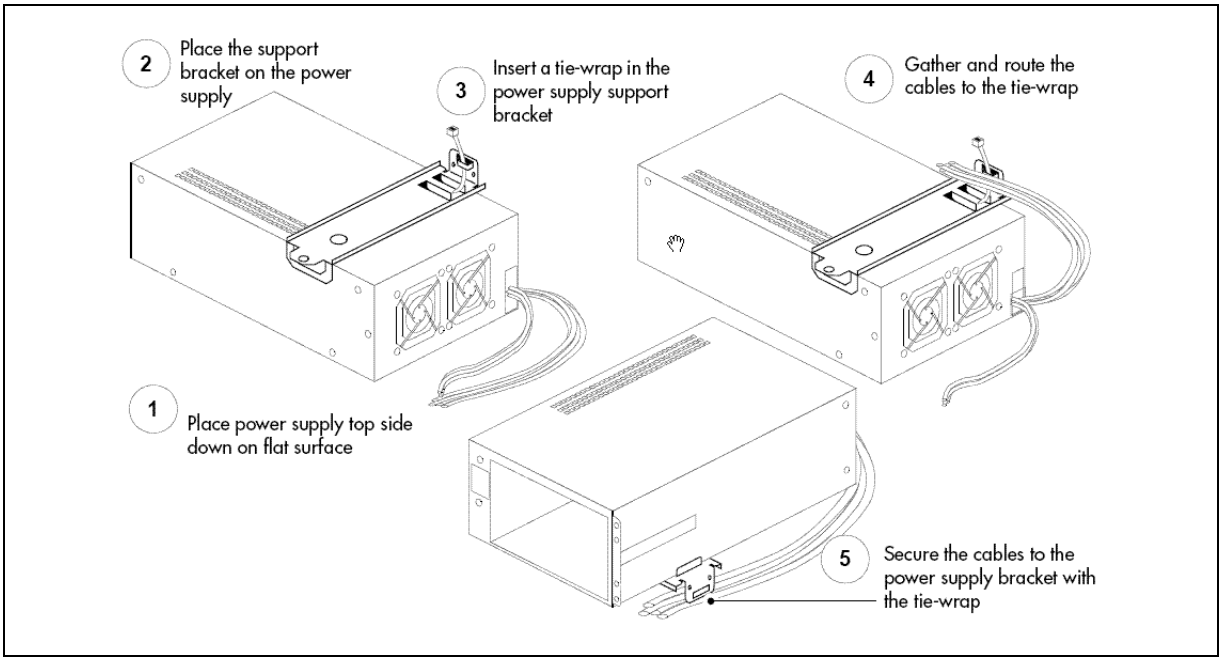
Figure 7 Fastening the power supply support bracket cables


2
Place the support bracket on the power supply
3
Insert a tie-wrap in the power supply support bracket
4
Gather and route the cables to the tie-wrap
1
Place power supply top side down on flat surface
5
Secure the cables to the power supply bracket with the tie-wrap

13 Install the power supply support bracket in the BCM450 main unit.

14 Position the redundant power supply cage in the main unit. Make sure the power supply module tray opening faces the rear of the main unit.

15 Attach the redundant power supply cage to the main unit using the four chassis mounting screws.

16 Bundle the P2, P3, P4,P5,P6, P7, and P8 cables together. Run the cables on the top of the power supply chassis, and then secure with the cable clamp.

17 Connect cable P2 (all cables are labeled on the connector) into the bottom media bay module backplane power connector.

18 Connect cable P3 into the top media bay module backplane connector.

19 Bundle P2, P3, P4, P5, P6, P7, and P8 together with a grommet. This is to prevent the cables from being pinched by the base function tray.

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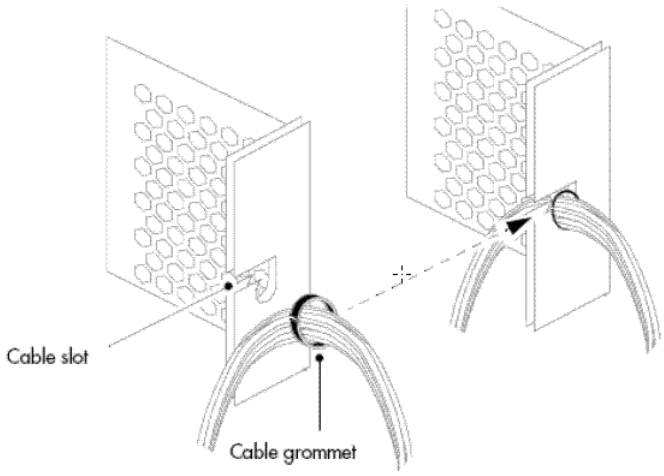
20 Insert the P2, P3, P4, P5, P6, P7, and P8 into the cable slot on the chassis (secured with the grommet).



Insert the P2, P3, P4, P5, P6, and P7 auxiliary cables into the cable slot.

21 Ensure that one power run connects to one MBM backplane connector. Each power run has multiple connectors. Do not connect a single power run to both MBM backplane connectors.

22 Connect the 4-pin PSU AUX cable to the 4-pin AUX connector.

23 Connect the 20-pin PSU Main cable to the PSU Main connector.

24 Install the main unit top cover.

--End--

Installing the secondary cooling fan

Perform the following procedure to install the secondary cooling fan after you install the redundant power supply cage.

Prerequisites

- Power down the BCM450 system.
- You require a Phillips head screwdriver.
- Ensure you disconnect the BCM450 main unit from the AC power source.

CAUTION
Risk of damage to equipment
You must wear an antistatic grounding strap at all times when handling electronic components. Failure to do so can result in damage to the equipment.

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Procedure steps

Step	Action
1	Attach one end of a grounding strap to your wrist and the other end to a grounded metal surface.
2	Remove the fan access panel screws at the top and bottom of the panel. Place the screws in a safe location.
3	Tip the top of the fan access panel toward you.
4	Grasp the fan access panel with both hands, and then lift the away from the main unit. Do not stretch the fan cables.
5	Disconnect the CIF card fan cables.
6	Remove the snap rivets that hold the fan to the fan access panel. The snap rivet has two parts: a center pin and a collar. Gently separate the plastic rivet pin with your fingernail from the center of the rivet collar. Remove the rivet pin and collar from the fan access panel. Place the rivet pin and collar in a safe location.
7	Lift the fan away from the fan access panel. Put the old fan access panel in a safe location.
8	Place one of the fans on the new fan access panel, over one of the grills.
9	Ensure you orient the fan cable to the bottom of the fan and that the fan label is closest to the grill on the panel.

Attention: Ensure the label of the new fan faces the back of the BCM450 unit. Air must flow out of the unit as indicated by the embossed arrows on the fan.

10	Align the fan chassis mounting holes with the holes in the fan access panel.
11	Hold the fan in place against the fan access panel, and then push the rivet collar through the fan access panel and fan chassis mounting holes.
12	Insert the rivet pin into the rivet collar.
13	Repeat steps 8 through 12 for the second fan.

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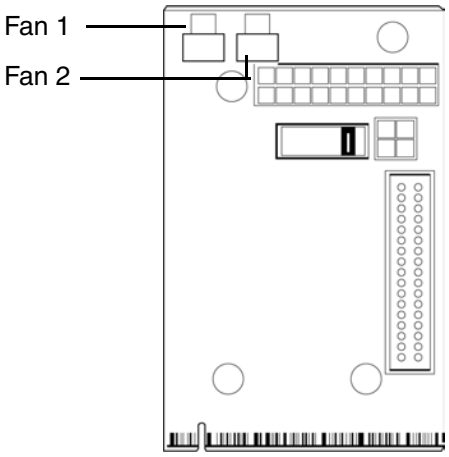
14 Connect the fan cable connector of the leftmost fan (when looking at the back of the BCM450) to the Fan 1 connector on the CIF card.



15 Connect the second fan cable connector to the Fan 2 connector on the CIF card.

16 Mount the fan access panel to the main unit.

17 Tip the top of the fan access panel toward you.

18 Insert the bottom lip of the fan access panel into the main unit.

19 Align the screw holes in the fan access panel with the screw holes on the main unit.

20 Install and tighten the fan access panel screws.

21 Restore the BCM450 system to operation.

22 To test the direction of the fan exhaust, hold a piece of paper or your hand close to the fan exhaust. A correctly installed fan blows air away from the main unit.

23 If the fan exhaust air flow is incorrect, remove the cooling fan, or fans, and reinstall it in the correct position.

--End--

Installing the power supply modules

Perform the following procedure to install the main and redundant power supply modules into the power supply cage.

Prerequisites

- You must install the redundant power supply cage.
- Ensure that both the primary and secondary fans are connected properly before restarting the system.

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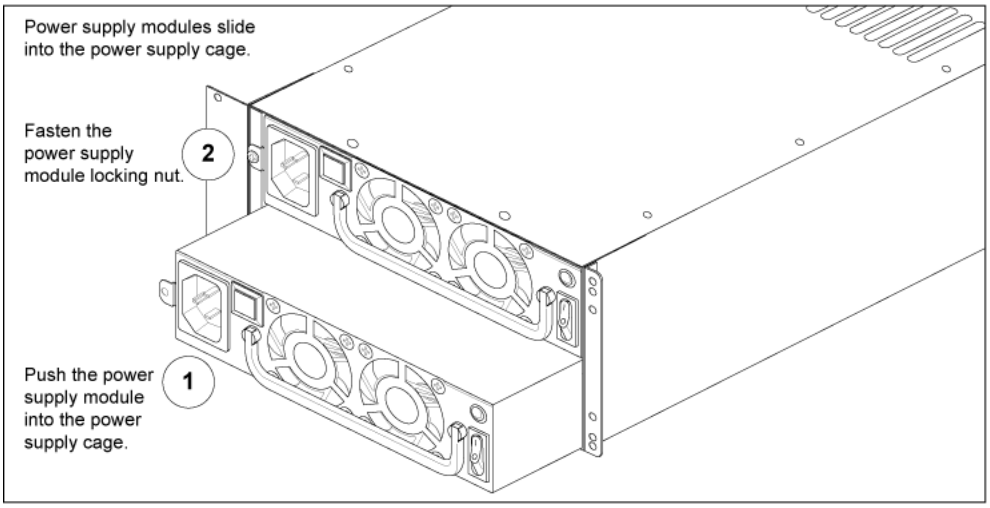
CAUTION
Risk of damage to equipment
You must wear an antistatic grounding strap at all times when handling electronic components. Failure to do so can result in damage to the equipment.

Procedure steps

Step	Action
1	Position the power supply modules in the redundant power supply cage. Ensure they are oriented correctly (the power status light must be on the top right corner).
2	Push on the power supply module until the face of the module is flush with the casing. You can hear a click when the power supply module is properly seated.


Power supply modules slide into the power supply cage.
Fasten the power supply module locking nut.
2
Push the power supply module into the power supply cage.
1

3	Secure each module with the power supply locking nut (located on the right side of the module).
4	Ensure the power switches are both set to the **ON** position before powering on the BCM system.
5	Connect both AC power cords to AC outlets. If only one cord is connected, only the connected power supply functions.
6	Turn on the BCM450 system. Ensure both power status lights are on, and that the fans are functioning properly.

--End--

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Common procedures

The following sections describe common procedures that you use while maintaining the BCM450 system.

Navigation

- Disconnecting the cables from the main unit (page 35)
- Disconnecting the cables from the expansion cabinet (page 36)
- Shutting down the system for maintenance (page 36)
- Returning the system to operation (page 38)
- Removing the base function tray (page 39)
- Reinstalling the base function tray (page 40)
- Removing the main unit top cover (page 41)
- Installing the main unit top cover (page 42)

Disconnecting the cables from the main unit

Disconnect the cables from the BCM450 main unit to prepare the system for maintenance operations.

WARNING

Risk of leakage currents

You must disconnect the telephony and data networking cables from the system before disconnecting the power cord from a grounded outlet

Procedure steps

Step	Action
1	Shut down the BCM450 system.
2	Remove the LAN cables from the LAN ports on the main unit.

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3	Remove the expansion cable if the main unit is connected to an expansion cabinet.
4	If the system uses the external Music Source port, remove the cable from this port.
5	If the system uses a Uninterruptable Power Supply (UPS), remove the USB cable from the USB port.
6	Remove the power supply cord from the main unit.

--End--

Disconnecting the cables from the expansion cabinet

Disconnect the cables from the BCM450 expansion cabinet to prepare the system for maintenance operations.

Prerequisites

- Use Element Manager to disable the media bay modules (MBM) that are installed in the expansion cabinet. For more information about disabling an MBM, see *Nortel Business Communications Manager 450 Administration and Security* (NN40160-601).

WARNING
Risk of leakage currents
You must disconnect the telephony and data networking cables from the system before disconnecting the power cord from a grounded outlet

Procedure steps

Step	Action
1	Disconnect the expansion cable from the expansion port on the expansion cabinet.
2	Disconnect all of the telephone lines and extension cables from the MBMs inserted in the expansion cabinet. If more than one cable exists, mark the cables to identify the port from which you removed them.
3	Remove the power supply cord from the expansion cabinet.

--End--

Shutting down the system for maintenance

Shut down the BCM450 system to prepare it for maintenance operations.

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Prerequisites

- Ensure you have a recent backup of the BCM450 system programming. If a recent backup is not available, use Element Manager to back up the system data. For information about backing up the system data, see *Nortel Business Communications Manager 450 1.0 Administration and Security* (NN40160-601).
- Remove the telephony and data networking lines from the BCM450 main unit and expansion cabinet. For more details, see Disconnecting the cables from the main unit (page 35) and Disconnecting the cables from the expansion cabinet (page 36).

WARNING
Risk of leakage currents
You must disconnect the telephony and data networking cables from the system before disconnecting the power cord from a grounded outlet.

Procedure steps

Step	Action
1	Launch Element Manager.
2	From the **Administration** tab, click the **Utilities** folder to expand it.
3	From the **Utilities** folder, select **Reset**.
4	Click **Shutdown BCM System** to shut down the system. The BCM450 system begins the shutdown process. When the shutdown process is complete, the final warning dialog box appears, and the system status LED becomes yellow and enters a flashing state.
5	Click **OK** to disconnect Element Manager. When the shut down is complete, the power LED becomes black, and the status LED enters a solid yellow state.
6	Remove the DS256 cables from the front of the BCM main unit and, if present, the expansion cabinet.
7	Mark the cables to ensure a correct reconnection.
8	Disconnect the BCM main unit and expansion cabinet power cords from the AC outlet.
9	Ensure you have room to access the part you are working on. Remove the BCM main unit from the rack, if necessary.

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--End--

Returning the system to operation

Return the BCM system to operation to restart telephony services after you complete your maintenance operations.

Prerequisites

- For more information about installing the system, see *Nortel Business Communications Manager 450 1.0 Installation — Hardware* (NN40160-301).

WARNING
Risk of service loss
When you restart the system, all digital telephony, IP client voice mail, and Voice over IP (VoIP) ports are not available until the system services restart.

WARNING
Risk of leakage currents
You must reconnect the power cord to a grounded outlet before reconnecting the telephony and data networking cables to the system.

Procedure steps

Step	Action
1	If you removed the BCM450 main unit from the rack or wall, replace it.
2	Ensure your BCM450 power supply is connected to your BCM450 system and to an AC wall outlet or a UPS.
3	Ensure the telephony cables are connected to the BCM450 main unit and BCM450 expansion cabinets.
4	Check the Power and Status LEDs on the main unit. After the BCM450 starts, both LEDs must be solid green. If either LED is not solid green, a problem with the main unit exists. For a detailed description of the LED states, see System status monitor LEDs (page 51).
5	If this system has an expansion cabinet, check the Power and Status LEDs on the media bay modules (MBM) in the expansion cabinet. Both LEDs must be solid green. If either LED is not solid green, a problem exists with the MBM or the expansion cabinet.

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For a detailed description of the MBM LED states, see *Nortel Business Communications Manager 450 1.0 Installation—Hardware* (NN40160-301).

6 Use Element Manager to restore the programming.

For information about restoring system programming, see *Nortel Business Communications Manager 450 1.0 Administration and Security* (NN40160-601).

--End--

Removing the base function tray

Remove the BCM450 base function tray from the system if it is defective or if you need to perform maintenance on it.

Prerequisites

- You must shut down the BCM450 system. For more information, see Shutting down the system for maintenance (page 36).

CAUTION
Risk of equipment damage
Protect the hardware components against damage from electrostatic discharge.

Always wear a grounded wrist strap before you handle components. Always place the components in a static-free container.

Procedure steps

Step	Action
1	Disconnect any connectors from the front of the base function tray.
2	Attach one end of the grounding strap to your wrist and the other end to a grounded metal surface.
3	Remove the base function tray latch screws and place them in a safe location.
4	Pull the base function tray latches toward you into the unlocked position.

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5	Grasp the base function tray latches and pull the base function tray out of the main unit.
6	Place the base function tray on a flat, clean, and static-free surface.

--End--

Reinstalling the base function tray

The following procedure describes how to reinstall a base function tray after maintenance, or how to install a new base function tray if it is defective or damaged.

Prerequisites

- Ensure the main unit is disconnected from the AC power source.

CAUTION
Risk of equipment damage
Protect the hardware components against damage from electrostatic discharge.

Always wear a grounded wrist strap before you handle components. Always place the components in a static-free container.

Procedure steps

Step	Action
1	Disconnect the BCM system from the AC power outlet.
2	Attach one end of the grounding strap to your wrist and the other end to a grounded metal surface.
3	Move the base function tray latches to the unlocked position.
4	Position the base function tray in the correct main unit bay.
5	Insert the base function tray into the main unit.
6	Push the base function tray latches to the locked position.
7	Install the base function tray latch screws.
8	Insert all connectors in the correct locations on the base function tray face.
9	Restore the BCM system to operation.
10	Observe the system status monitor LEDs to ensure the base function tray initializes correctly.

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--End--

Removing the main unit top cover

Use this procedure to remove the top cover of the BCM450 main unit if you want to perform maintenance activities.

Attention: Do not operate the BCM450 main unit with the top cover removed. Do not leave the top cover removed for extended periods of time.

Prerequisites

- Ensure the main unit is disconnected from the AC power source.

CAUTION
Risk of equipment damage
Protect the hardware components against damage from electrostatic discharge.

Always wear a grounded wrist strap before you handle components. Always place the components in a static-free container.

Procedure steps

Step	Action
1	Shut down the system. For more information, see Shutting down the system for maintenance (page 36).
2	Disconnect the BCM system from the AC power outlet.
3	If required, remove the main unit from the server rack.
4	Attach one end of the grounding strap to your wrist and the other end to a grounded metal surface.
5	Remove the two top cover screws located at the rear of the main unit. Place the screws in a safe location.
6	Lift the back of the cover and slide it rearward until it disengages from the main unit.

--End--

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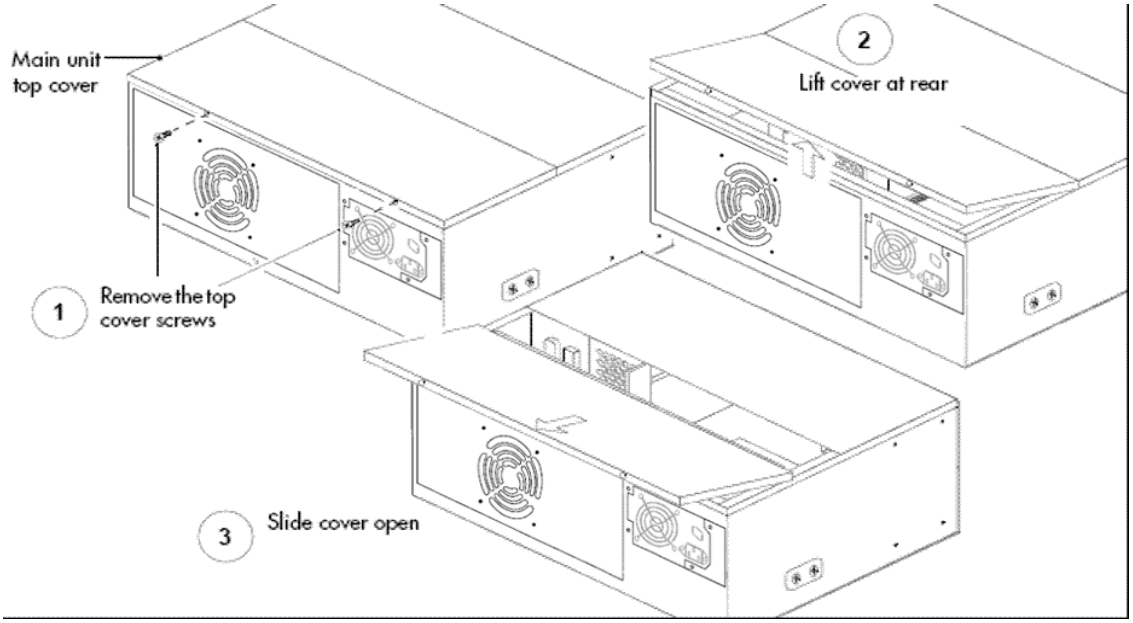
Figure 8 Removing main unit top cover



Installing the main unit top cover

Use this procedure to install the top of the main unit cover after maintenance or installation activities are complete and you are ready to start the BCM450 system.

Prerequisites

- Ensure the main unit is disconnected from the AC power source.

CAUTION
Risk of equipment damage
Protect the hardware components against damage from electrostatic discharge.

Always wear a grounded wrist strap before you handle components. Always place the components in a static-free container.

Procedure steps

Step	Action
1	If required, remove the main unit from the server rack.
2	Attach one end of the grounding strap to your wrist and the other end to a grounded metal surface.
3	Set the top cover on the main unit.

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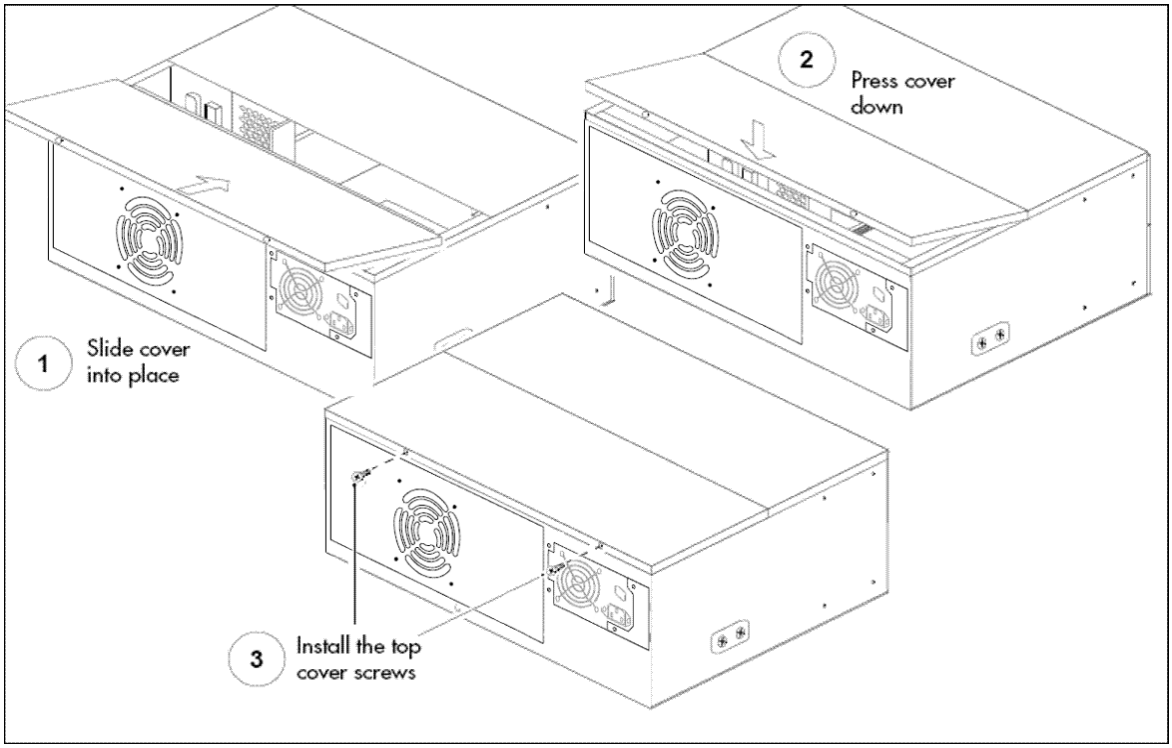
4 Slide the top cover forward until it engages with the main unit.

5 Press the top cover down until it rests on the chassis.

6 Install the two top cover screws at the rear of the main unit.

--End--

Figure 9 Installing main unit top cover



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BCM450 modules management

Determine the status of any of the settings under the media bay module headings. To correct a problem or change a module setting, you can enable or disable a bus or module, or select ports on the module.

Prerequisites to BCM450 modules management

- Launch Element Manager and connect to your BCM450 system.

BCM450 modules management procedures

This task flow shows you the sequence of procedures you perform to manage modules in your BCM450 system. To link to any procedure, click on BCM450 modules management navigation.

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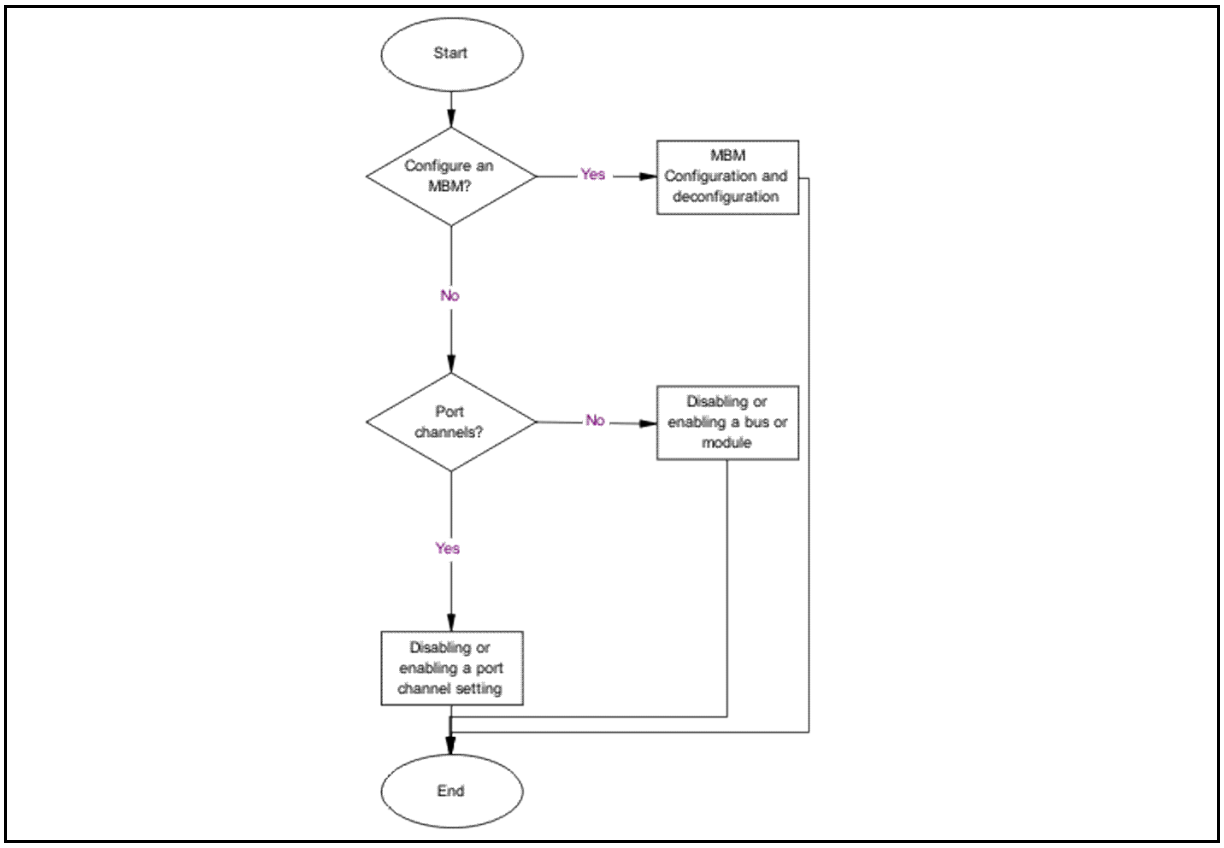
Figure 10 BCM450 modules management procedures



BCM450 modules management navigation

- Configuring or deconfiguring a Station Module type MBM (page 46)
- Configuring or deconfiguring a Trunk Module or Combination MBM (page 47)
- Disabling or enabling a bus or module (page 48)
- Disabling or enabling a port channel setting (page 48)

Configuring or deconfiguring a Station Module type MBM

You can configure or deconfigure MBMs through Element Manager.

Prerequisites

- The MBM must be installed in the system. For information about replacing an MBM, see Replacing a media bay module (page 15). For information on installing a new MBM, see *Nortel Business Communications Manager 450 1.0 Installation — System* (NN40160-301).

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Procedure steps

Step	Action
1	In Element Manager, click **Configuration > Resources > Telephony Resources > Modules** pane.
2	Select the module you want to configure or deconfigure.
3	Click on the **Configured Device** field. A menu appears.
4	Select the type of MBM you want configure.
5	Click **Configure**.
6	Enter the **Start DN**.
7	Enter the **Public received digits/OLI**.
8	Enter the **Private received digits/OLI**.
9	Select or clear the Assign target lines check box (default is clear).
10	If you want to deconfigure an MBM, select the MBM.
11	Click **Deconfigure**.
12	Click **OK** to delete the configuration for the MBM.

--End--

Configuring or deconfiguring a Trunk Module or Combination MBM

You can configure or deconfigure MBMs through Element Manager.

Prerequisites

- The MBM must be installed in the system. For information about replacing an MBM, see Replacing a media bay module (page 15). For information on installing a new MBM, see *Nortel Business Communications Manager 450 1.0 Installation — System* (NN40160-301).

Procedure steps

Step	Action
1	In Element Manager, click **Configuration > Resources > Telephony Resources > Modules** pane.
2	Select the module you want to configure or deconfigure.
3	Click on the **Configured Device** field. A menu appears.
4	Select the type of MBM you want configure.
5	Click **Configure**.

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6	Enter the **Start Line**.
7	Click **OK**.
8	If you want to deconfigure an MBM, select the MBM.
9	Click **Deconfigure**.
10	Click **OK** to delete the configuration for the MBM.

--End--

Disabling or enabling a bus or module

Disable or enable a bus or module when you need to isolate a problem or block access from the module.

Attention: If there is more than one module assigned to the DS30 bus, all modules are disabled.

Procedure steps

Step	Action
1	In Element Manager, click **Configuration > Resources > Telephony Resources > Modules** pane.
2	Select the module you wish to enable or disable.
3	Click either **Enable** or **Disable**.
4	Click **OK**.

--End--

Disabling or enabling a port channel setting

Disable or enable a port channel setting if you need to isolate a problem or block access from the module, by turning off individual port channels rather than the entire module.

Prerequisites

- A trunk media bay module has no changeable settings on the Trunk Port Details record.

Procedure steps

Step	Action

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1. In Element Manager, click **Configuration > Resources > Telephony Resources > Modules** panel.
2. Click the module supporting the port you want to enable or disable.
3. On the **Set Port Details** tab, select the port you want to enable or disable.
4. Click either **Enable** or **Disable**.

   The **State** box indicates the mode of operation for the port. If the port is enabled, this box shows “unequipped” unless a device is physically connected.

--End--

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System LEDs reference

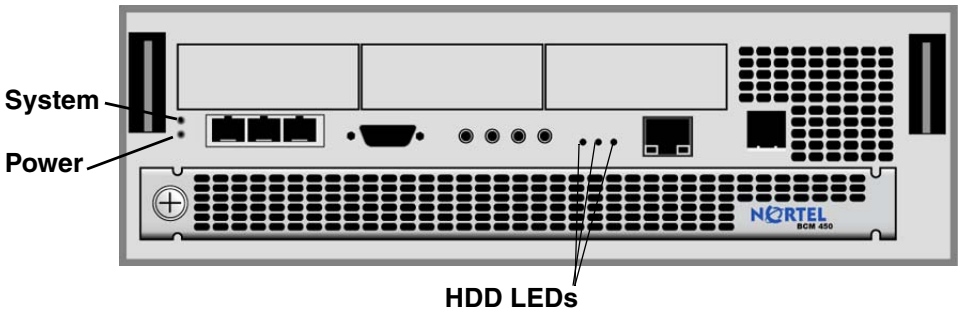
This chapter provides information about the main unit LED status during normal operation, startup, and reboot.

System status monitor LEDs

The BCM450 system status LEDs on the main unit provide information about the status of the BCM450 system. Use these LEDs to determine if the system is functioning properly and if the system generates an alarm.

The following figure shows the location of the system status and power LEDs.

Figure 11 LED Locations



The following tables show the meanings of LED states.

Table 1 System status LEDs states and descriptions

Power	Status	Description
LED states seen during Start up sequence		
Solid yellow	Solid yellow	Power applied to system
Solid yellow	Off	Power on self test (POST). Lasts for 9 seconds.
Solid yellow	Solid yellow	System initializing (lasts 14 seconds).
Solid green	Solid yellow	Kernel initialization (lasts 8 seconds) or Safe OS.

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Table 1 System status LEDs states and descriptions

Power	Status	Description
Solid green	Blink green	Services initializing (lasts 1 minute).
Solid green	Solid green	Normal operation.
Solid green	Solid red	Services initialization failed.
LED states seen during Safe Mode start up sequence		
Solid red	Solid green	System running with factory default settings enabled.
Solid red	Solid red	System running in Software Reset mode.
Solid red	Blink yellow	System running in Configuration Reset mode.
LED states seen during shut down sequence or failure		
Solid green	Blink yellow	Graceful shutdown in progress.
Off	Solid yellow	Graceful shutdown completed.
Solid red	Blink yellow	Overheat detected. Thermal shutdown completed.
Solid red	Solid red	Power spike or Rail power fluctuation detected.
Blink red	Solid red	Rail power fluctuation. Power Monitor Shutdown completed.
Solid yellow	Solid red	Power spike shutdown completed (temperature and Rail power ok).
Off	Off	No power, system is shut down (power cable is disconnected).
Start-up Profile LED states (seen only during initial system install or staging)		
Blink Yellow	Blink Yellow	Start-up Profile executing.
Solid Green	Solid Green	Start-up Profile successfully applied.
Blink Yellow	Blink Red	Start-up Profile failure.

Hard disk drive LEDs

The following table describes the possible LED states for the hard disk drive LED.

Table 2 HDD LED states

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LED	Description
Off	No HDD detected
Green	Normal operation
Red	HDD fault
Orange/Flashing Orange	Activity

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Nortel Business Communications Manager 450 1.0

Maintenance

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